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**Providing comprehensive health insurance coverage in rural China: A critical appraisal
of the New Cooperative Medical Scheme and ways forward**

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Abstract

Health insurance reform for rural China is at a crossroads. The achievements of recent reform initiatives appear remarkable as measured by coverage through the New Cooperative Medical Scheme (NCMS); yet there is little evidence that NCMS has made major strides toward improving the financial protection of health care for the rural population. Our assessment suggests that the system may become trapped in a vicious cycle of increases in government subsidies and resulting cost escalations in health care due to strategic responses among health care providers, a factor that hitherto has been largely overlooked. We argue that to improve the sector's overall performance, a thorough reform is needed to change provider payment incentives. Attention should also be directed to strengthening the ability of government agencies to manage health insurance funds effectively through their roles as purchasers and third-party payers.

Introduction

Policy changes in health insurance for China's rural population in recent decades can best be described as pendulum swings. Before 1978, the vast majority of the rural population was covered by the Cooperative Medical Scheme (CMS), under which access to basic health services was provided at relatively low cost. The economic reforms launched at the end of 1970s led to the collapse of People's Collective Communes, the institutional backbone of CMS, and the rural population was left almost completely on their own to pay for health care. The absence of insurance coverage, coupled with the introduction of fee-for-service (FFS) payment requirements in the health system, rendered health services unaffordable for the majority of the rural population: according to a national survey, about three-quarters of rural residents no longer sought care when recommended (Gu, 2008, Gu, 2012).

The New Cooperative Medical Scheme (NCMS) introduced in 2003, formed part of a shift in the opposite direction. Subsidised heavily by the government at different levels, the scheme aimed at providing universal coverage for basic health care for rural residents regardless of individual characteristics, including job and socioeconomic status, education, pre-existing health conditions, or level of wealth. Thus far individual contributions to the insurance premium by rural residents have remained low. To improve enrolment into the plan, the government has substantially increased its contribution to the individual premium, from merely 10RMB (US\$1.60) in 2003 to 240RMB (\$38.51) in 2012.

The expansion of NCMS has been remarkable by any measure: 726 million rural residents in 2,448 counties were covered under the program by 2008 (You and Kobayashi, 2009), and coverage reached 97.5% by 2012, making NCMS arguably the largest medical security program in the world (Table 1). More importantly, the benefit package for the insurance plan,

which was initially meant for catastrophic illness, was expanded in 2007 to include outpatient and preventive care (Xinhua, 2012).

<Table 1 about here>

Beyond these official statistics, however, performance assessment of NCMS has delivered less optimistic results. The main goal of the program is to protect households against the financial risk of ill-health by reducing patients' liability for the cost of catastrophic illness (Babiarz et al., 2012, Zhang et al., 2010a). Yet, there is little evidence that the program has made major strides toward that objective. Studies have shown that NCMS has had limited impact on out-of-pocket payment reduction; in some cases, health care payments in fact increased (Wagstaff et al., 2005, Sun et al., 2010, Sun et al., 2009, Yip and Hsiao, 2009b). Some scholars have pointed to a few fundamental flaws in the structure and management of NCMS, such as its payment system and its high drug costs, as the main obstacles that have prevented the program from reaching its full potential (Yip and Eggleston, 2004, Yip and Mahal, 2008, Yip et al., 2010, Wagstaff et al., 2009, Wagstaff and World Bank., 2009).

The analysis presented in this paper provides a critical assessment of rural health insurance reforms in recent years, in particular, of NCMS, by drawing on the available peer-reviewed literature and relevant data from official government sources. Our assessment of the current reform effort for NCMS, adopting a conceptual framework introduced by the World Health Organization (WHO, 2000), focuses on several key functions in public health care financing—out-of-pocket payment, the benefit package, provider payment methods, and purchasing—to shed light on a number of fundamental shortcomings of the current reform efforts. Our conclusions point out a number of key issues of the NCMS, i.e. low reimbursement rates, high

co-payments, limited insurance benefit package, and lack of third-party purchaser. In addition, we also suggest a thorough reform of provider incentives. The Chinese policy makers must not only focus on the design of a health insurance scheme, and it is equally important to look at structural problems of the Chinese healthcare system. Most healthcare facilities in China rely heavily on direct health services and prescription drug revenues to survive, even if we increase the reimbursement rates or insurance benefit package, the availability of insurance funds may create incentives for price hikes, which insured patients (and the uninsured as well) are helpless to combat.

The following sections discuss the rural health insurance system in China, followed by a critical appraisal of the NCMS, policy lessons and a discussion.

Evolution of the health insurance system in rural China

Social insurance, including coverage for rural areas, had been a major source of health care financing in China before the economic reforms of 1978. Health care for the majority of rural residents in China was covered by the Cooperative Medical Scheme (CMS), under which rural residents paid small sums to help finance basic services from grassroots doctors. This scheme played an important role in ensuring access to basic health services and essential medicines for rural residents at a relatively low cost and comprised a critical part of China's health care system, which was heralded at the time as a successful model for managing public health care in the developing world (Zhang et al., 2010b, Ma et al., 2012).

With the disbanding of the People's Collective Communes, which formed the institutional backbone of CMS, during the late 1970s and early 1980s, the rural health care previously

financed and provided through CMS could no longer be sustained (Ma et al., 2012, Yan et al., 2011). At the end of the 1970s, before the reforms took hold, 90% of the rural population had access to care of reasonable quality and some protection against catastrophic expenses, but within a decade that proportion had shrunk to 5%: rural residents were left almost completely on their own to pay for health services (Ooi, 2005).

Although the Chinese government tried to revive CMS during the 1980s and 1990s, these efforts proved futile and the situation continued to deteriorate, especially in the 1990s, when reforms toward the marketisation of health facilities were implemented fully. The number of village health personnel decreased by 18-23% depending on the estimate, and the number of health facilities in towns and villages also decreased significantly. More importantly, due to lack of government support in financing and support for health care, fee-for-service (FFS) payment arrangements were introduced in the rural health care system (Henderson et al., 1995, Akin et al., 2004, Yip and Eggleston, 2004). As a result, the average per episode out-of-pocket payment for inpatient care in rural areas increased from 613RMB (\$106.39) in 1993 to 2,649RMB (\$320.04) in 2003 (Chen et al., 2011, You and Kobayashi, 2009), while the proportion of rural residents who did not seek care when recommended reached 75.4%. Because the majority of the country's population resided in rural areas, it became clear that lack of access to health care, if left unaddressed, could seriously undermine the political legitimacy of the Chinese Communist Party.

NCMS was launched in 2003 in response to the dire need for access to affordable health care for the rural population. Although bearing a name derived from its highly regarded predecessor, NCMS differs from the old CMS along several key dimensions (Table 2). NCMS is a government-subsidised and voluntary scheme, which makes it attractive to low-risk

households. The premium is subsidised by the state with individuals making modest contributions initially. In many regions, participants were expected to contribute only about 10RMB (US\$1.21) per person per month in 2003, the remainder being payable by central and local governments. Second, participation in NCMS provides rural residents with access to a range of health care facilities, from village clinics to municipal hospitals, although the reimbursement rates for health services received differ from one type of facility to another. Third, NCMS is administered at the county level, and although it offers participants the advantages of pooled resources, there are significant disparities in these pooled resources across different counties. For example, in the more affluent eastern and coastal regions, local governments are able to invest funds to augment the government subsidy, thus supporting more comprehensive coverage to their residents (Yang, 2013).

<Table 2 about here>

As a voluntary insurance plan, NCMS experienced a very low enrollment rate during its early years. With a low level of government subsidies, the program was initially an insurance plan covering primarily catastrophic illness, with deductibles; this plan offered few enrollment incentives to rural residents who had a low degree of health risks (WHO, 2004: 14). Over time, however, the plan has become more comprehensive and has attracted a significant injection of government subsidy. Although it varies among provinces, an individual's contribution to the insurance premium is kept relatively low, and this premium is usually heavily subsidised by the government. The government's contribution to the individual subscriber's monthly insurance premium increased from 10RMB (\$1.21) in 2003 to 240RMB (\$30.02) in 2012; and since 2007, coverage has expanded from mainly catastrophic illness to outpatient and preventive care (Xinhua, 2012). In addition, expansion and maintenance of NCMS coverage

has become a key performance indicator among government officials, and administrative means have been employed to further that goal. Expansion since 2007 has been quite remarkable with NCMS coverage reaching 97.5% coverage of China's 857 million rural residents by 2012.

Despite its rapid expansion, studies thus far have yielded mixed reviews of the performance of the NCMS around a number of key criteria. Scholars have argued that the NCMS was not able to provide adequate financial protections for rural households, and thus called for a more generous package. A 2004 WHO report suggested that the NCMS overly emphasized medical catastrophe at the expense of the health needs of the majority of the rural population because the number of farmers falling into poverty due to medical expenses was likely to be small (World Health Organization, 2004b). The NCMS may also inflate medical costs at lower levels of health services hierarchy that tend to over-prescribe for patients covered by NCMS (Sun *et al.*, 2009a, Sun *et al.*, 2009b).

A critical assessment of the NCMS

Drawing from the above discussion, four key areas have been identified and provide causes for concern about the insurance's performance and overall sustainability: (a) low reimbursement rates and high co-payments at the point of care; (b) a limited benefit package; (c) problems with the FFS system and supplier-induced demand for insured patients; and (d) the government's neglect of opportunities to act as a third-party negotiator of services and prices on behalf of the program's subscribers.

Low reimbursement rates and high co-payments at the point of care

It is widely recognized that NCMS has thus far not succeeded in consistently and substantially lowering out-of-pocket costs for patients who subscribe to its program (Yip and Mahal, 2008, Yip et al., 2010, Yip and Hsiao, 2009a, Anson and Shifang, 2005, Babiarz et al., 2010, Hao et al., 2010). Out-of-pocket payments remain a significant financial burden for rural households and that financial protection from NCMS was rather limited (Sun et al. 2010). Although NCMS has reached most of the country's rural areas, it has failed to cover large medical expenses (particularly for outpatient care) because copayments are usually high (Zhang et al. 2010b).

Failure to reduce out-of-pocket costs to subscribers is not an issue confined only to NCMS. Out-of-pocket spending for health care has increased following the introduction of other forms of health insurance as well (Wagstaff and Lindelow, 2008).

A limited benefit package

An important contributing factor to the failure of NCMS to adequately protect insurees from financial risks is the limited benefit package it offers. The plan's benefit package mainly concentrates on inpatient and catastrophic care, offering outpatient care only for a limited roster of diseases. When the plan was first initiated, a large proportion of cost-effective primary interventions, or outpatient care were excluded from the benefits package. Outpatient care, however, is not an inexpensive service for the plan's rural subscribers and having to pay for it out-of-pocket could lead to poverty (Kavosi et al., 2012, Szwarcwald et al., 2010, Wagstaff et al., 2005). Lack of coverage for outpatient care may also lead to insurees becoming seriously ill because they cannot afford primary care including prevention that might address their health problems early on (Hu et al., 2011). Although NCMS extended its coverage to outpatient care in 2007, reimbursement for services provided is made either through the insuree's medical

savings account or through county-level pooled funds that require substantial cost-sharing (Barber and Yao, 2011).

Although coverage of catastrophic illness remains the NCMS' primary objective, only a small number of severe diseases are included in its list of illnesses eligible for coverage and full reimbursement. This is because catastrophic treatments and financing are often provided at higher-level health facilities, such as township, county, or city hospitals. Some common life-threatening diseases, such as lung cancer, are not included in the list of eligible conditions for coverage, and co-payments for inpatient care of these remain high even after claims for allowable costs are paid (Liu et al., 2012, Wang et al., 2012a, Wang et al., 2012b, Zhou et al., 2011).

Problems arising from NCMS's inadequate benefit package have been further exacerbated by significant regional disparities in economic development in China. Because individual subscribers and local governments are required to contribute to the individual's insurance premium in addition to the contribution made by central government, subscribers and localities in less wealthy areas, are often unable to contribute as much to this total premium as are their counterparts in more affluent areas. In western and central China, where the level of economic development remains low, local governments as well as rural residents have a limited capacity to finance the overall program adequately; in the more prosperous eastern and coastal region, the insurance benefit package is usually much more comprehensive, as local governments and residents, even rural households, are better able to contribute resources to finance treatments that the basic NCMS package does not cover.

Provider payment incentives under a FFS health system

The effectiveness of NCMS has been undermined by the prevailing payment mechanism for health care in China, a FFS system that allows health care providers to make a profit on services rendered and also to profit from related prescription drug sales (Wagstaff and World Bank, 2007, World Bank, 1997). As most health care facilities rely heavily direct health services and prescription drug revenues to survive (Latker, 1998, Yip and Hanson, 2009, Yip and Hsiao, 2008), the availability of insurance monies (e.g. NCMS reimbursements) for claims may create incentives for price hikes, which insured and uninsured patients are unable to address effectively. Studies have also found that over-prescription of antibiotics in village clinics is common for patients covered by NCMS (Sun et al., 2009, Bogg et al., 2010). Village clinics and township health centres in counties covered by NCMS have tended to generate more revenues than similar facilities in counties not participating in the program (Babiarz et al., 2012), and the care delivered at participating facilities was also found to be more costly and more sophisticated than medically necessary (Wagstaff and Lindelow, 2008). One study (Bogg et al., 2010) reported in particular an alarming increase in Cesarean delivery rates and costs after NCMS was launched.

In recent years, a number policies and regulations designed to alter the perverse incentive embedded in the FFS payment system have been initiated. For instance, prospective payment methods have been used to make providers bear the financial risk of overprescribing and to provide incentives for providers to reduce inefficient use of services. Evidence has begun to arrive that points to positive effects from using prospective payment methods to regulate provider behaviors (Luo, 2011, Jiao et al., 2013), but successful broad-scale implementation will necessarily depend on the capacity of the local government agencies in insured areas, which are in effect the managers of the insurance program at the level most qualified to closely monitor provider behaviors. Particular examples of prospective payment methods that might

be suitable for application in China include diagnosis-related group (DRG) payment, and capitation (Yip and Hsiao, 2009a), but government agencies, as the insurers, must not only be able to establish appropriate service-specific standards with regard to the package of services to be delivered, but also closely monitor providers' performance and enforce those standards.

Lack of progress in third-party price negotiations

Moreover, due to widespread asymmetry of information in the health care market, insured subscribers to NCMS and other government-sponsored health insurance plans must rely on the government itself as a knowledgeable third-party purchaser to act on their behalf in negotiating the prices and quality of services they receive from providers. However, there is little evidence that NCMS has made noticeable progress in that direction. Generally speaking, the larger the share of provider revenue that the purchaser can control, the more likely it will be that the purchaser can leverage desired performance from providers. Yet purchasers for NCMS cover only a limited range of inpatient and outpatient services, and the plan may exert little influence over the provision of care, because (owing to providers' receipts of FFS payments from other sources) it only represents a small share of provider income.

In addition, to transform NCMS into a proactive purchaser of health care on behalf of its subscribers would require effective coordination of different levels of local health authorities and providers, a task that would demand significant changes in existing institutional arrangements.

Although NCMS has thus far shown limited capability in utilizing its purchasing power, some experimental efforts have shown promising results. In Shanghai, purchasing can now only be made based on the most cost-effective choices for each treatment plan. For example, a hospital

is allowed to offer and use a maximum of two pharmaceutical products that share the same formula, selected according to their cost-effectiveness (Yang, 2009). Some Western regions, taking into account evidence of provider performance as well as village-level ratings of services provided, have created “fund boards,” comprised of village representatives, government officials, township health center directors, and auditors, to act as a single purchaser and to make purchasing decisions (Wang et al., 2009). In this system, insurers will still be able to exercise some influence over purchasing decisions in these areas. It is too early to tell whether these cost-effective limits set on hospital purchases, or locally comprised purchasing boards can be sustained in the long run, and, more importantly, whether they will prove to be applicable in a wide range of circumstances.

A Vicious Cycle?

The failure of NCMS to protect China’s rural population from the financial risks of health care by reducing its subscribers’ out-of-pocket payments for services and medications has led to political pressure for more a “generous” insurance package financed through increased government subsidies (Ma et al., 2012). The tremendous economic growth in China during the decades since 1980 has put the Chinese government in an enviable position to address this concern by injecting massive funding into health care financing. The upsurge in its contribution to the individual subscriber’s insurance premium, from merely 10RMB (US\$1.60) in 2003 to 240RMB (\$38.51) in 2012, is a clear indication of the government's commitment to improvements in the program. Some further government initiatives under consideration include merging NCMS with the Urban Residents Insurance Scheme and the establishment of a uniform insurance scheme for the country’s entire population.

Spending more money may seem an easy remedy in the context of burgeoning government revenues. But our assessment of overall performance by NCMS to date shows that increased government subsidies in financing health insurance will not necessarily lead to better outcomes if strategic responses to this increased funding, on the part of affected health care providers, are not taken into consideration. As mentioned above, evidence has shown that health care providers in China may supply high-margin, high-tech care and sophisticated medicines to NCMS patients at every opportunity, however justified, and that insured patients have often paid more than warranted for their treatments (Hu et al., 2009, Yip and Hsiao, 2009b). Health care providers, who for survival rely largely on revenue from services rendered and from sale of prescription drugs, are also likely to charge more as insurance subsidization rises and the benefits package becomes more comprehensive.

Thus repeated increases in government subsidization may feed into a vicious cycle, in which health care providers' strategic responses rise to meet the new infusion of funds, Increased subsidization also leads to more comprehensive benefit coverage, which induces a rise in providers' billings for new medical services and medications. Out-of-pocket expenditures for patients would not decrease and could even increase, as expansion of the benefit packages and resulting service improvements lead to increased claim rates, and coverage of illnesses is outpaced by rises in health care expenditures, creating political pressures for more government subsidies--which will in turn perpetuate the cycle of strategic response (Figure 1).

<Figure 1 about here>

Policy Implications

Health insurance reform for rural China, now at a crossroad, must take steps to avoid perpetuating that vicious cycle while continuing to build on the positive successes of NCMS over its first decade in operation. Reform initiatives expanding coverage appear to have achieved a dramatic rise in enrollment in the program, which is now available in almost all areas of the country and covers 97.5% of the rural population. The critical assessment presented here, based on existing empirical evidence from numerous studies, has explored several fundamental shortcomings that have emerged in the program—its failure to reduce patients’ out-of-pocket expenditures, its still-limited benefits package, its difficulties in countering providers’ strategic responses to increased subsidies and expanded benefits, and its slowness in exerting its potential powers as a third-party purchaser of health services and medications for its subscribers. But our research also reports several promising efforts toward containing costs and controlling provider behavior that could prove to be widely applicable across the great variety of circumstances and locations that NCMS must address.

It may seem appealing and financially viable for the government to augment the program’s benefit package through the provision of greater funding, a policy it has pursued since the NCMS’ inception in 2003. Our analysis instead points to the danger of once again becoming trapped in the vicious cycle of strategic responses to increased subsidies, that is, provider behaviors that escalate costs and thus in turn necessitate further subsidies. If the substantial increase in government subsidies in financing NCMS has not yet resulted in the positive changes intended, it is a wishful thinking to believe that simply injecting more funds into the program will alone slow the trend toward ever-higher costs.

Our analysis also suggests that the FFS system, China’s predominant payment method for health care services, feeds the vicious circle of funding and strategic response and leaves

NCMS subscribers still vulnerable to price hikes and unregulated overuse of services. Ineffective use of the government's tremendous purchasing power as a third-party negotiator for pricing of services and medications for its subscribers has been another major obstacle fulfilling the program's objective of lowering costs to individual subscribers. We argue that although it seems imperative for NCMS to move away from FFS payment arrangements, the success of such a change would depend critically upon the capacity of government agencies to address the challenges arising from adoption of untested alternative payment methods. Similarly, the capacity deficit is a major constraint for government agencies aspiring to be effective managers of health insurance funds by using their roles as third-party negotiators and purchasers to improve the sector's performance and provide NCMS subscribers with protection against cost escalations and against undiminished or increased out-of-pocket health care expenditures, which have hitherto often been the unintended price of expanded coverage and increasingly subsidised premiums.

Finally, while this paper used China as a case study, the experience of China can shed some light on other countries with similar health system and economic development. For instance, a number of countries in South and Southeast Asia have big rural population, and use FFS as the provider payment mechanism, e.g. India and Vietnam (Wagstaff, 2007a, Liu *et al.*, 2012c). These countries also encountered problems of supplier-induced demand under health insurance. China's experience suggests that, without a clear understanding of the health care system and governance framework that support it, the intended benefits of any health insurance program will be difficult to realise (Ramesh *et al.*, 2012). New measures in improving access should be directed not only at offsetting rising costs, but also at designing and implementing

reforms in changing provider payment incentives in participating health service facilities, in an effort to make best use of the public financing in the long term.

Note:

1. Currency conversion is based on official nominal exchange rates at the year.

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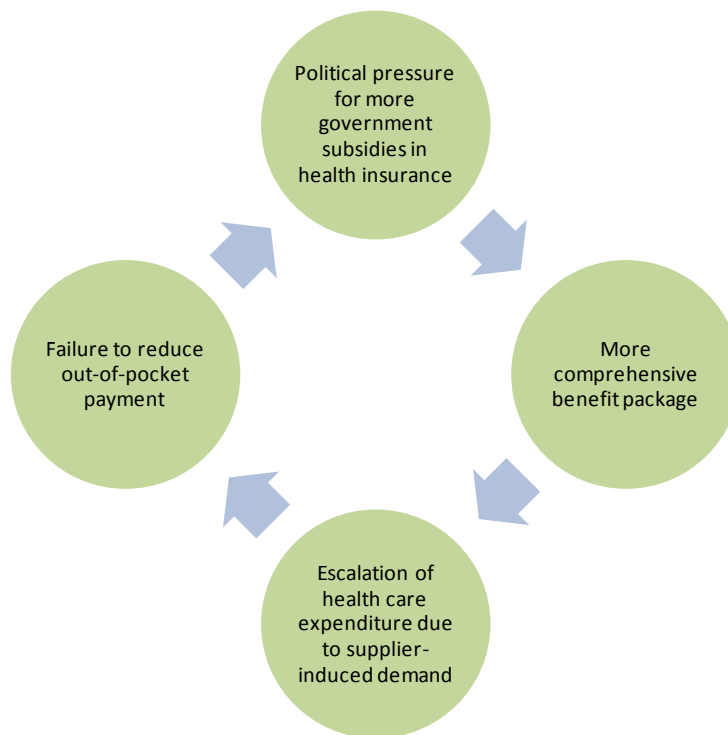
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Figure 1. A vicious cycle of more comprehensive benefit package



Source: The authors.

Table 1. Recent changes in NCMS insurance coverage

Year	Counties participating	Enrolment (100 million)	Enrolment as % of total population	Average government subsidy per participant (RMB)
2005	678	1.79	75.66	42.10
2006	1451	4.1	80.66	52.10
2007	2451	7.26	86.20	58.90
2008	2729	8.15	91.53	96.30
2009	2716	8.33	94.19	113.36
2010	2678	8.36	96.00	156.57
2011	2637	8.32	97.5	246.2

Source: China Statistical Yearbook (National Bureau of Statistics of China, 2011)

Table 2. Comparable features of NCMS and CMS

	NCMS (2003 onwards)	CMS (late 1950s to early 1980s)
Date started	2003 (Pilot scheme was initiated in four provinces)	From late 1950s onwards
Enrolment	Voluntary at household level	Mandatory at individual level (You and Kobayashi, 2009)
Coverage	94.3 % in 2009	Less than 10 % in the 1990s (Sun et al., 2010)
Policy guidance	General policy guidance are issued by the central government, local governments retain considerable discretion over the details	No policy guidance from central government
Administration	County government sets the reimbursement rate, ceilings, medical saving account, etc.	Village levels (People's Collective Communes)
Risk pooling	County level	Township or village level
Target population	Rural residents (840 million)	Rural residents
Financing mechanism	In western and central China, the central government assisted the local government in providing financing for the scheme. In the more affluent eastern and coastal region, financing the premium was mainly through local government's general taxes.	Supported entirely by state funding. Care was provided by barefoot doctors, including basic outpatient services, emergency first aid, immunizations, public health surveillance (Babiarz et al., 2010).

Designated health facilities	All levels of health facilities	Barefoot doctors affiliated with the People's Collective Communes
Covered services	Inpatient services, catastrophic outpatient services, some prevention care services	Prevention care and outpatient care (You and Kobayashi, 2009)